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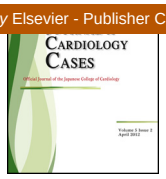

Case Report

Spontaneous healing of saccular type aneurysm with ventricular septal lacerations after blunt chest trauma

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ABSTRACT

We present a case of spontaneous healing of saccular type aneurysm with ventricular septal lacerations after blunt chest trauma. A 50-year-old Japanese man was transferred to our hospital diagnosed with ventricular septal lacerations after blunt chest trauma. Electrocardiogram (ECG) at admission showed ST elevations in I, II, III, aVL, aVF, V2-through to V6 were observed. Laboratory data showed elevated creatine kinase. Echocardiogram revealed normal ventricular contraction and a saccular type ventricular septal laceration with an influx blood flow without septal shunt flow. After admission, serial echocardiogram and cardiac computed enhancement tomography showed disappearance of a saccular type ventricular septal laceration. Gadolinium-enhanced magnetic resonance imaging (MRI) was performed at day 30. MRI showed an enhanced scar of saccular type aneurysm with ventricular septal laceration; this image suggested some residual damage of ventricular septal laceration. At discharge, ECG was resolved with normal ST-T level and no Q wave, but persistent complete right bundle branch block and left axis deviation. After one year, repeat MRI showed a scar of saccular type aneurysm with ventricular septal laceration.
<**Learning objective:** To recognize spontaneous healing of saccular type aneurysm with ventricular septal lacerations after blunt chest trauma. This is a case of saccular type aneurysm with ventricular septal laceration after non-penetrating blunt chest trauma successfully healed with conservative therapy. There are many case reports of blunt chest trauma, however, there are few reports of treatment with conservative therapy.>

Introduction

There are many case reports which are cardiac trauma by chest blunts, however, there are few reports which is treated with conservative therapy previously [1,2]. We presented a case of spontaneous healing of saccular type aneurysm with ventricular septal lacerations after blunt chest trauma.

Case report

A 50-year-old Japanese man was transferred to our hospital diagnosed with ventricular septal lacerations after blunt chest trauma. He worked on a ship off the coast. He received a direct hit from a pulley to his anterior chest on the ship. After the accident, he lost consciousness. After recovery of his consciousness, he was saved by colleagues and transferred to our hospital via a nearby hospital. His past medical history included pustulosis palmaris et plantaris 3 months earlier. He had smoked a pack of cigarettes a day for 40 years. A physical examination on admission revealed a heart rate of 87 beats per minute and a blood pressure of 134/76 mmHg. Another physical examination was unremarkable except for a left chest contusion trauma which extended from the 4th to 6th inter-costals area. Fig. 1 shows electrocardiogram (ECG) at admission. ST elevations in I, II, III, aVL, aVF, V2-through to V6 were observed. Chest X-ray revealed cardio-thoracic ratio of 52%, rib fracture, and dullness of left side costophrenic angle with normal pulmonary vascular markings. Laboratory data showed elevated creatine kinase (3095 IU/L), creatine kinase MB (229 IU/L), aspartate amino transferase (243 IU/L), alanine amino transferase (49 IU/L),

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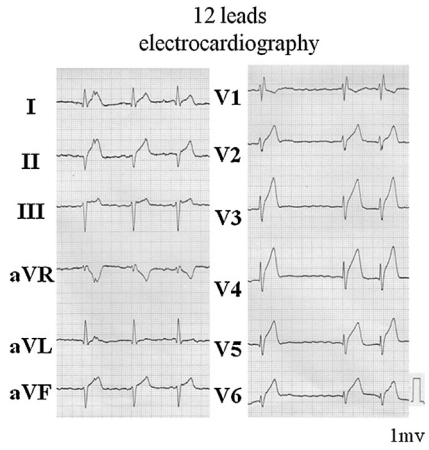

Fig. 1. Electrocardiography at admission. It showed atrial fibrillation, left axis deviation and complete right bundle branch block. In addition, ST elevations in I, II, III, aVL, aVF, V2-through to V6 are observed.

lactate dehydrogenase (586 IU/L), C reactive protein (4.5 mg/dl), and positive troponin T. Echocardiogram revealed normal ventricular contraction (i.e. no focal asynergy) and a saccular type ventricular septal laceration with an influx blood flow without septal shunt flow (Fig. 2). After admission, serial echocardiogram and cardiac computed enhancement tomography showed disappearance of a saccular type ventricular septal laceration (Fig. 3). Gadolinium-enhanced magnetic resonance imaging (MRI) was performed at day 30 (Fig. 4). MRI showed an enhanced scar of saccular type aneurysm with ventricular septal laceration, this image suggested some residual damage of ventricular septal laceration. At discharge, ECG was resolved with normal ST-T level and no Q wave, but persistent complete right bundle branch block and left axis deviation (Fig. 5). After one year, repeat MRI showed a scar of saccular type aneurysm with ventricular septal laceration.

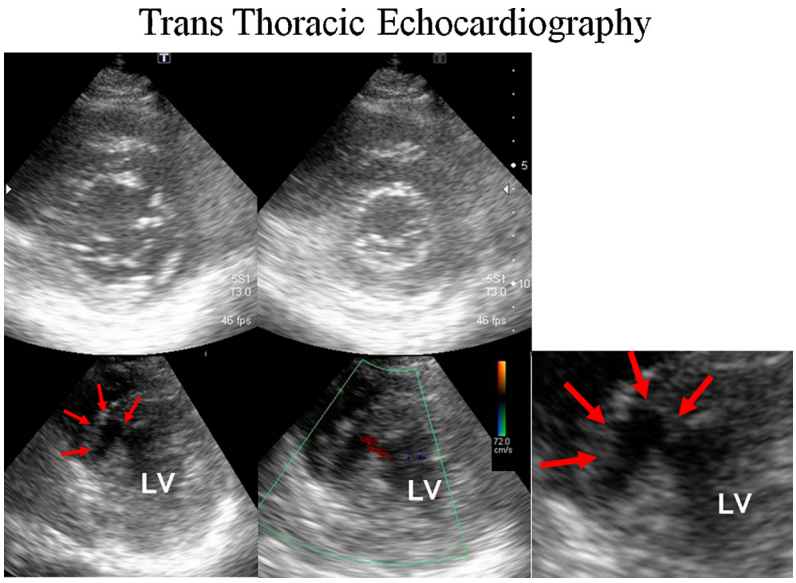

Fig. 2. Transthoracic echocardiography at admission. Echocardiogram revealed normal ventricular contraction and a saccular type ventricular septal laceration (7.2 mm × 13.3 mm) with an influx blood flow without septal shunt flow. LV, left ventricle.

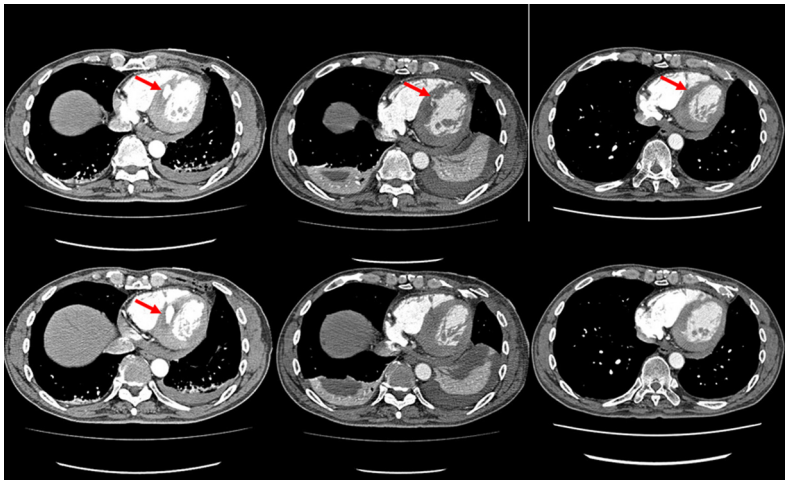

Fig. 3. Serial cardiac computed enhancement tomography. Serial cardiac computed enhancement tomography showed disappearance of a saccular type ventricular septal laceration (left side, at admission; center, on day 4; right side, on day 20).

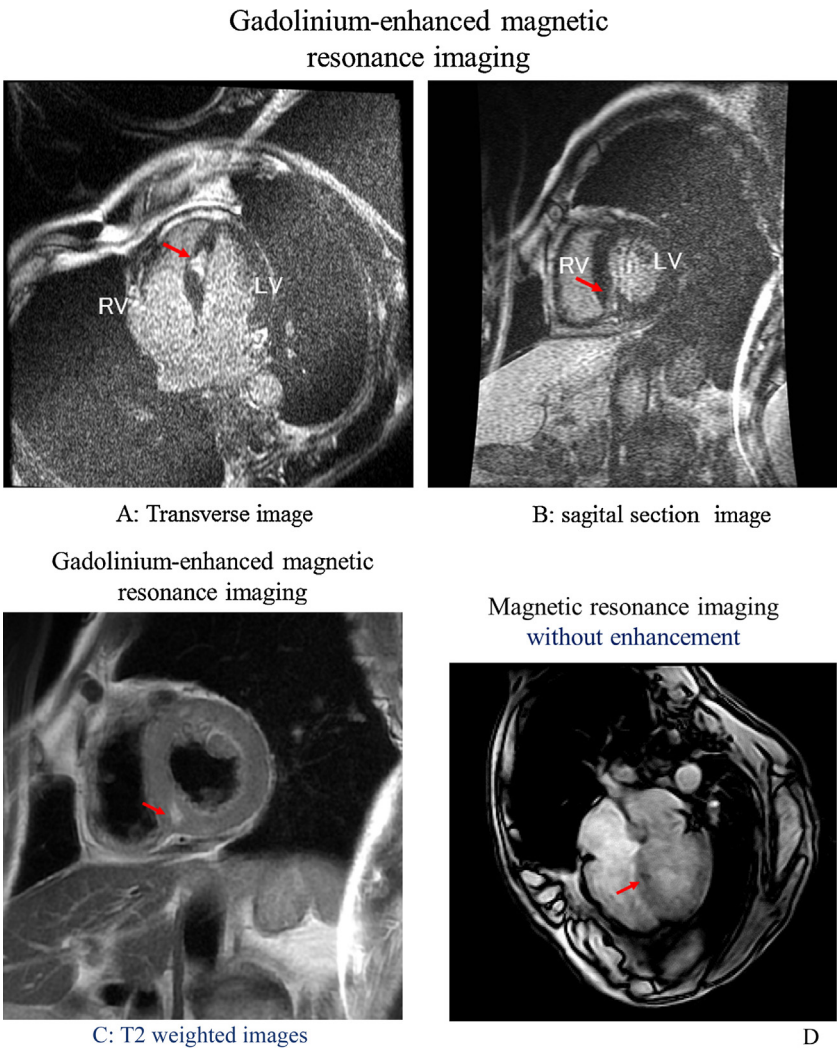

Fig. 4. Magnetic resonance imaging (MRI). Delayed phase image of gadolinium-enhanced MRI was performed at day 30 (A, B). (C) T2 weighted images in this case showed edematous myocardium. It means high degree of myocardium damage. MRI without enhancement was performed at one year (D). MRI showed a scar of saccular type aneurysm with ventricular septal laceration. LV, left ventricle; RV, right ventricle.

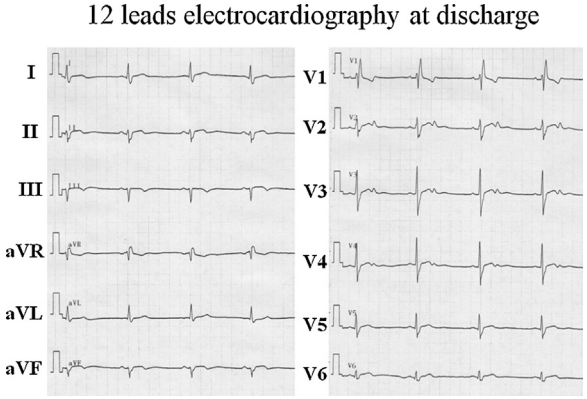

Fig. 5. Electrocardiography at discharge. It showed normal sinus rhythm with right bundle branch block and complete recovery of ST elevation without Q wave.

Discussion

This case involves a saccular type aneurysm with ventricular septal laceration after non-penetrating blunt chest trauma successfully healed with conservative therapy. There are many case reports of blunt chest trauma, however, there are few reports of treatment with conservative therapy [1,2]. Previous case reports showed residual ventricular septal laceration [1,2], ventricular septal laceration with complete defect which was spontaneously repaired gradually [3], and perforation of the laceration that required operation later [4,5]. In this case, we considered operation for the septal laceration. However, we selected conservative therapy according to previous reports, because there was no left-to-right shunt. Serial computed tomography images demonstrated saccular type aneurysm with ventricular septal laceration that was spontaneously repaired. We thought that the cause of this factor is something neo edematous tissue fills the cavity, because gadolinium-enhanced MRI at day 30 showed high intensity in T2 weighted image. Gadolinium contrast medium enhances, for example, myocardium that replaced fibrous tissue after myocardial infarction. Moreover, MRI image at one year showed replaced scar tissue in the aneurysm with ventricular septal laceration (i.e. fibrous tissue or hemosiderin etc.). The cause of this spontaneous healing is thought to be the direction of saccular type aneurysm with ventricular septal laceration related to this mechanism. In cases of saccular type ventricular septal laceration with blood flow from the apex, saccular type aneurysm with ventricular septal laceration has the risk of perforation. However, in cases where the direction of saccular type aneurysm with ventricular septal laceration is different from the blood flow, blood stagnation may easily

occur in the cavity. In patients with saccular type aneurysm with ventricular septal laceration, we could expect spontaneous healing from some cases.

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